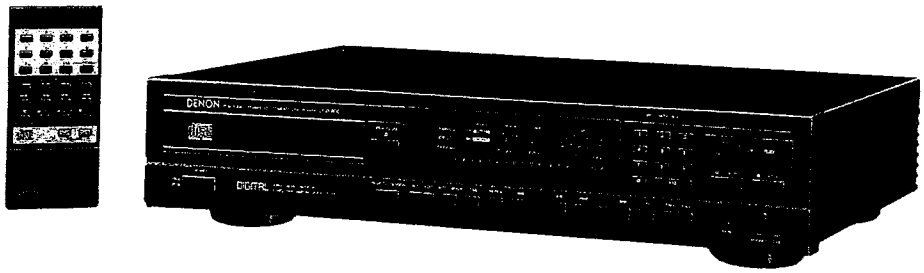
DENON

Hi-Fi Component

SERVICE MANUAL

STEREO CD PLAYER

MODEL DCD-800



NIPPON COLUMBIA CO., LTD.

TABLE OF CONTENTS

FEATURES 2
SPECIFICATIONS 3
NAMES AND FUNCTIONS OF PARTS ..... 4~5
NOTE FOR HANDLING OF LASER PICK-UP ..... 6~8
DISASSEMBLY ..... 9~10
ASSEMBLY 10
DISASSEMBLY OF MECHANISM UNIT 11
ASSEMBLY 12
MAINTENANCE SERVICE AND ADJUSTMENT ..... 13~19
IC TERMINAL FUNCTION LIST ..... 19~23
PARTS LIST OF P.W. BOARD (2U-1496) ..... 24~25
PARTS LIST OF EXPLODED VIEW 26
EXPLODED VIEW 27
EXPLODED VIEW OF MECHANISM UNIT 28
PARTS LIST OF MECHANISM UNIT 28
WIRING DIAGRAM 29
P.W. BOARD OF 2U-1496 30
P.W. BOARD OF KU-5862 31
SCHEMATIC DIAGRAM 33
SEMICONDUCTORS 34

FEATURES

The DCD-800 compact laser disc player utilizes a unique DENON Super Linear Converter which prevents deterioration of sound quality in the PCM playback system, assuring accurate reproduction of sound record on compact laser discs, in the studio or in live sound production areas. The parts for this high performance disc player have been selected with careful discrimination, to produce high quality, realistic playback of the full musical production.

SPECIFICATIONS

AUDIO

No. of channels:	2 channels
Frequency response:	4 ~ 20,000 Hz
Dynamic range:	95 dB
Signal-to-noise ratio:	99 dB
Harmonic distortion:	0.004% (1 kHz)
Separation:	90 dB (1 kHz)
Wow and flutter:	Less than the measuring limit (±0.001% W. peak)
Output voltage:	2.0 V

DISC

Audio Compact disc are used.

GENERAL CHARACTERISTICS

Power supply:	50/60 Hz, Voltage is shown on rating label
Power consumption:	13 W
Dimensions:	434 (17.1 in) W x 99 (3.9 in) H x 315 (12.4 in) D mm
Weight:	4.1 kg

FUNCTIONS AND DISPLAY

Functions:	Direct selection, automatic search, programmed selection, repeat playback, manual search, auto space, etc.
Display:	Track number, index number, time, program and direct, etc.
Other functions:	Headphone jack (variable level)

REMOTE CONTROL UNIT

RC-203

Remote control system:	Infrared pulse system
Power supply:	3 V DC Two SUM-4 (standard size four) dry cell batteries
External dimensions:	60 (2.4 in) W x 128 (5.0 in) H x 17 (0.7 in) D mm
Weight:	85 g (Includes batteries)

ACCESSORIES

Connecting pin cord

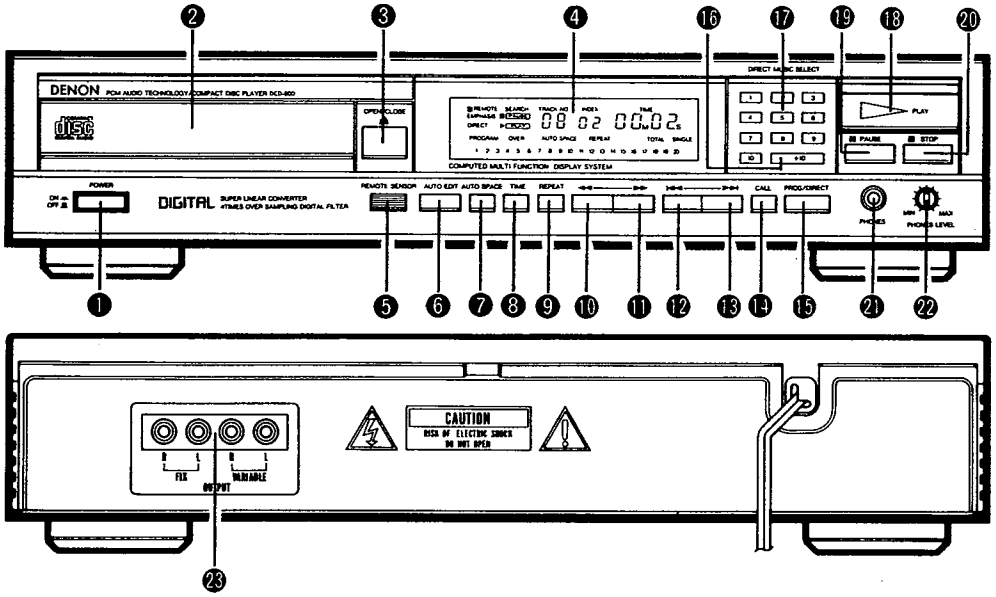
* Design and specifications are subject to change without notice in the course of product improvement.

VAROITUS: SUOJAKOTELOA EI SAA AVATA. LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ SILMILLE VAARALLISTA LASERSÄTEILYÄ.

ADVARSEL: USYNLIG LASERSTRALING VED ABNING NAR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGA UDSAETTELSE FOR STRALING.

"CLASS 1
LASER PRODUCT"

NAMES AND FUNCTIONS OF PARTS



❶ Power Switch (POWER)

- Press this switch to turn the power source ON.
- When the power is turned ON. If the disc is not loaded, after a few seconds all of the indicators will light up with the exception of the [■ REMOTE] indicator.
- If a disc is loaded, the total number of tracks on the disc will be displayed in the TRACK NO. section of the display, and the total playback time will be displayed in the TIME section. The calendar will light up to display the total number of tracks.

❷ Disc Holder

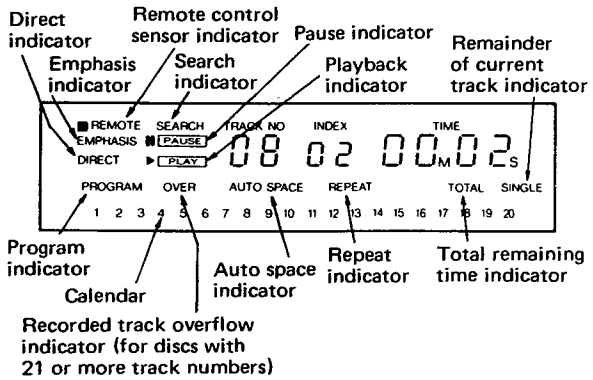
- The disc is loaded into the disc holder for play.
- The disc holder is opened and closed by pressing the disc holder open/close button (▲ OPEN/CLOSE) ❸.
- It can also be closed by pressing the play button (▶ PLAY) ⓲ or pause button (❚❚ PAUSE) ⓳.

❸ Disc Holder Open/Close Button (▲ OPEN/CLOSE)

- The disc holder ❷ is opened and closed by pressing this button.
- Press the button once to eject the disc holder ❷ forward. Press it again to close the holder.
- If the disc holder is closed and a disc has been loaded, the disc is rotated for several seconds, and then the total number of tracks on the disc and the total playback time are then displayed on the digital display ❹.

❹ Display

- The display area consists of sections for the track number, the index, the playback time, and the calendar.



❺ Remote Control Photosensitive Window

- This window receives the light transmitted from the wireless remote control unit.
- The RC-203 wireless remote control unit should be operated while it is pointed in the direction of the photosensitive window.
- When the remote control is operated, the [■ REMOTE] indicator will light in the display area.

❻ Auto Edit Button (AUTO EDIT)

- This function divides the compact disc at the start of the track which is closest to the midway point of total playback time.
- Pressing this key when the player is stopped causes the playback time for the first half of the disc to be displayed for approximately 2 seconds, along with the numbers of the tracks on that side, then the content of the second half of the disc is displayed in the same way. After that, the player automatically moves to the start of the initial track and remains there in the pause state.
- Pressing either the Play (▶ PLAY) or the Pause (❚❚ PAUSE) button starts play. When the first half is ended, the player pauses automatically at the start of the first track of side 2. Pressing either the Play (▶ PLAY) or the Pause (❚❚ PAUSE) button starts play. The player stops at the end of the final track.

❼ AUTO SPACE Button (AUTO SPACE)

- Pressing this button will cause the [AUTO SPACE] indicator to light up and a blank portion lasting 4 or more seconds to be inserted between the tracks. If this button is pressed while the [AUTO SPACE] indicator is lit, the lamp will go off and the auto space function will be cancelled.
- When the AUTOMATIC SEARCH button (⏮ , ⏭) is pressed, the auto space function will not operate.
- The auto space function will oeprate with programmed playback as well as normal playback.

❽ Time Mode Button (TIME MODE)

- This button is used to select the type of information to be read out under the TIME section of the display. Either the elapsed playback time of the current track, the remaining playback time for that track, or the playback time for the remaining tracks on the disc can be selected.
  Normally the elapsed playback time of the current track is displayed. If the button is pressed once, the [SINGLE] indicator lights and the remaining time left to play on the

track is displayed. If the button is pressed again, the [SINGLE] indicator goes out, and the [TOTAL] indicator goes on, and the remaining playback time for the remaining tracks left on the disc is displayed. If the button is pressed once more, the [TOTAL] indicator gose out and the display returns to the elapsed playback time for that track.
If the button is pressed so that the [TOTAL] indicator lights during programmed playback, the playback time for all of the remaining programmed tracks is displayed.

⑨ Repeat Button (REPEAT)
- Press this button to repeat playback.
- When the (REPEAT) button is pressed, the [REPEAT] indicator lights and repeated playback is performed for all of the tracks on the disc. During programmed playback, all of the tracks programmed into memory are played repeatedly.
  Press the REPEAT button again to cancel the repeat operation.

⑩ Manual Search Reverse Button (◀◀)
- Press this button to move playback in fast reverse.
- When the machine is in play, sound will be produced during the time that the button is being pressed and the fast reverse is operating.
- If the button is pressed while the machine is in the pause state, the fast reverse will operate three times faster than the reverse speed when the machine is in the play state. No sound will be produced.

⑪ Manual Search Forward Button (▶▶)
- Press this button to move playback in fast forward.
- When the machine is in play, sound will be produced during the time that the button is being pressed and the fast forward is operating.
- If the button is pressed while the machine is in the pause state, the fast forward will operate three times fast than the fast forward speed when the machine is in the play state. No sound will be produced.

⑫ Automatic Search Reverse Button (⏮)
- Press this button to move the pickup backward, to return to the beginning of the desired track.
- If this button is pressed during playback or pause, the pickup moves backward to the beginning of the track that corresponds to the number of times the button was pressed.

⑬ Automatic Search Forward Button (⏭)
- Press this button to move the pickup forward and advance to the beginning of the desired track.
- If this button is pressed during playback or pause, the pickup moves forward to the beginning of the track that corresponds to the number of times the button was pressed.

⑭ Call Button (CALL)
- Press this button to verify the track numbers that have been programmed into memory.

⑮ Program and Direct Button (PROG/DIRECT)
- Press this button to select the memory program function or direct track selection function.

⑯ +10 Button (+10)
- Press this button to select a track number that is larger than 11.
- The +10 button is used in conjunction with the ten-key pad ⑰. For example, to select track number 15, press the [+10] button and then [5] on the ten-key pad.
- Similarly, to select track number 32, press [+10], [+10], [+10] and then press [2].

⑰ Ten-key Pad (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
- These buttons are pressed for direct track selection or to program a selection into memory. For example, to play back the third track using the direct selection function, press [3] on the key pad. Track number 3 will then start to play. To play track number 12, press [+10] and then [2].
- Press the (PROG/DIRECT) button to enter the program mode, then program the track number.

⑱ Play Button (▶ PLAY)
- Press this button to play a disc.
- When the (PLAY) button is pressed, the [▶PLAY] indicator lights, and the number of the track being played, the index number, and the elapsed playback time for that track are displayed. The calendar lights to display the all of the playback tracks. The displayed tracks then go out in order as each finishes playing.
- When playback of the last track has finished, the [▶PLAY] indicator goes out, and the machine enters stop state.
- It is also possible to use the (PLAY) button to close the disc holder after a disc has been inserted. Playback then begins.

⑲ Pause Button (⏸ PAUSE)
- Press this button to stop the playback temporarily.
- If the (PAUSE) button is pressed during playback, the play is stopped temporarily, the [▶ PLAY] indicator goes out, and the [⏸PAUSE] indicator lights.
- To end the pause, push the (PLAY) button ⑱ or. (PAUSE) button ⑲ again.

⑳ Stop Button (■ STOP)
- Press this button to stop the playback.
- The rotation of the disc stops, and the total number of tracks and the total playback time are read out on the TRACK NO, and TIME sections of the display.
- During programmed playback, the total number of tracks programmed in memory and the total programmed performance time are displayed.

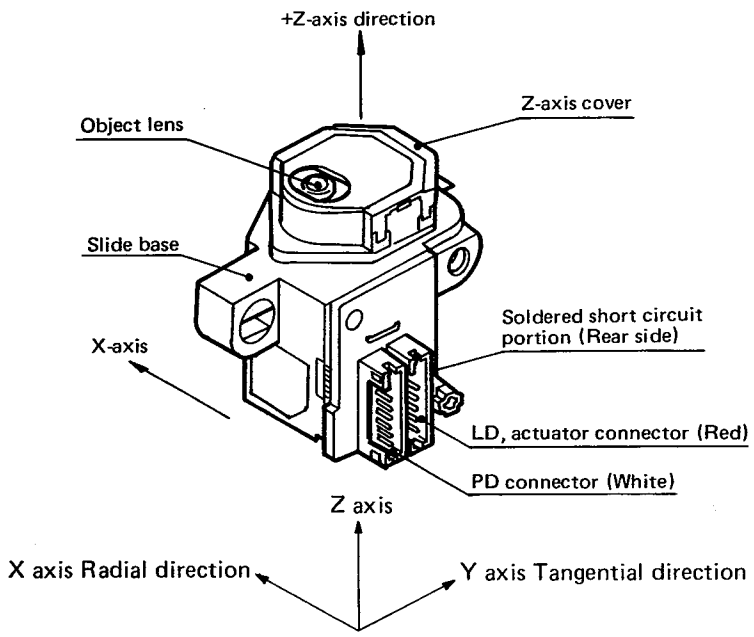
㉑ Headphone Jack (PHONES)
- When using headphones, please listen to them at an appropriate volume. (Headphones are sold separately.)

㉒ Volume adjustment knob
- This knob is used to adjust the output level (volume) of the headphone jack.

㉓ Output Terminal (FIX-VARIABLE)
- Connect the output teminal to the input terminal of the amp.

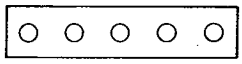
NOTE FOR HANDLING OF LASER PICK-UP

DESCRIPTION OF THE COMPONENTS



Label

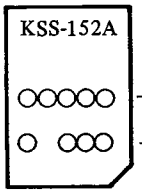
1. Serial number



This denotes the serial number used for quality control in the manufacturing plant.

Note: The numbers of figures in English numerals may be changed.

2. Label



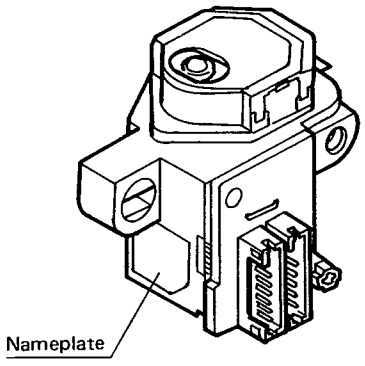
year
(last figure)
day month | quality control No.
○○ ○ ○ ○

but Oct. Nov. and Dec. are expressed by alphabetical letters of X, Y and Z.

10^2 1 10^{-1}
quality control ○ ○ ○ ○
LD drive current

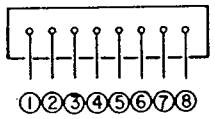
The expressed unit is by mA, with omission of the decimal point as for example, 56.5 mA will be expressed as 565, but the head of English letter means the control in the manufacturing plant.

3. Position of the labels



ELECTRICAL PIN CONNECTION

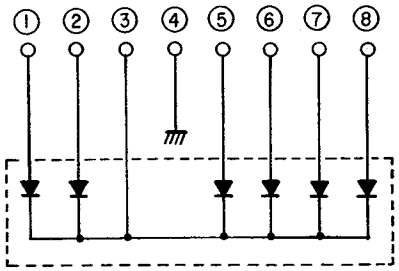
1. PD connector (JAPAN SOLDERLESS TERMINAL MFG CO. LTD "PH series" 8 pin)



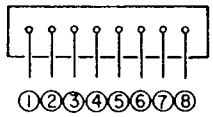
COLOR : WHITE

Pin No.	PD element
①	F
②	E
③	K
④	GND
⑤	A
⑥	B
⑦	C
⑧	D

PC Circuit Diagram



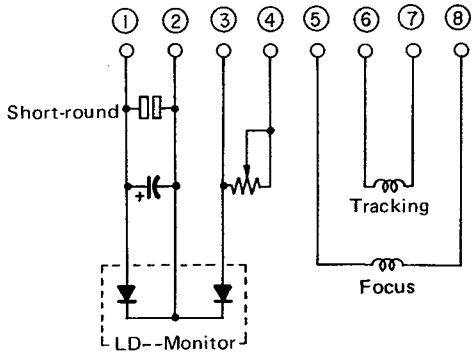
2. Actuator & LD connector (JAPN SOLDERLESS TERMINAL, MFG CO. LTD "PH series" 8 pin)



COLOR : RED

Pin No.	description
①	Laser
②	GND
③	monitor
④	reference
⑤	Fo (-)
⑥	Tr (+)
⑦	Tr (-)
⑧	Fo (+)

LD · Actuator Circuit Diagram



Cautions for Handling the Laser Pick-up

The laser pick-up KSS-152A is assembled and precisely adjusted using a sophisticated manufacturing process in our plant. Do not disassemble or attempt to readjust it. Please keep the following instructions carefully in handling pick-up.

1. Handle with Care

(1) Storage
Do not store the pick-up in dusty, high-temperatured or high-humidity environments.

(2) Please take care for preventing from shock by falling down or careless handling.

2. Laser Diode (LD)

(1) Protect your eyes
The laser beam may damage the human eye, since the intensity of the focused spot may reach 7 x 10^3 W/cm^2 even if the intensity at the objective lens is 400 μW maximum. As the light beam spreads after focused through the objective lens, it does not effect you in the place as far as more than 30 cms. However, do not look at the laser light beam either through the objective lens directly nor another lens or a mirror.

(2) Poison of As
Since the LD chip contains As (Arsenic), as GaAs + GaAlAs, as known as the poison, although the poison is relatively weak, in comparing with others, e.g. As_2O_3, $AsCl_3$ etc., and the amount is small, avoid putting the chip in acid or an alkali solution, heating it over 200°C or putting it into your mouth.

(3) Avoid surge current or electrostatic discharge
The LD may be damaged or deteriorated by it's own strong light if a large current is supplied to it, even if only a short pulse.
Make sure that there is no surge current in the LD driving circuit by switches or else. Be careful to handle pick-up as it may be damaged in a moment by human electrostatic discharge. The pins of the LD are short-circuited by solder for protection during shipment.
For safety handling of an LD, grounding the human body, measuring equipments and jig is strongly recommended. And still it is further desirable to make use of mat on the platform and floor for handling the LD.
To open the short circuit, remove the soldering quickly with a soldering iron whose metal part is grounded. The temperature of the soldering iron should be less than 320°C (30W).

3. Actuator

(1) The performance of the actuator may be effected if magnetic material is located nearby, since the actuator has a strong magnetic circuit. Do not permit dust to enter through the clearance of the cover.

(2) Cleaning the lens
It may change the specifications by attaching dust or ash on the object lens. Clean the lens with a cleaning paper dampened a little water, not pressing lens with so much strength by the cleaning paper.

4. Metal Bearing

As the metal bearing of Cu-compound sintered alloy is impregnated with Sankoru "FG-84" (by the Daido Fatty Oil Company made), never fail to supply the bushing with the same lubricant at the time of replacing the pick-up.

5. Handling

Please handle the laser pick-up with holding the slide base (rosin molded part).
When either a part of human body or some other things may happen to touch directly with the circuit part of P.W. Board, it may cause deterioration, take careful attention in handling this base.

6. Deterioration

When difficulty occurs either in focus or tracking adjustment nor able to adjust the focus or tracking, it seems that the laser pick-up is deteriorated. In these cases, check a value of laser diode current and give a decision for deterioration.

7. Fundamental Deterioration Decision of Laser Pick-up

(1) If a voltage value in between No. 2 and No. 6 pins of TP102 of the servo and signal processor unit, the value of laser diode current "iop" can be found by a formula "iop1" = $\frac{V1}{22}$.

(2) If an "iop" exceeds ±10% compared with the IOP indication on the laser pick-up nameplate, there is a fair chance for deterioration when it is checked under a circumambient temperature 23°C.

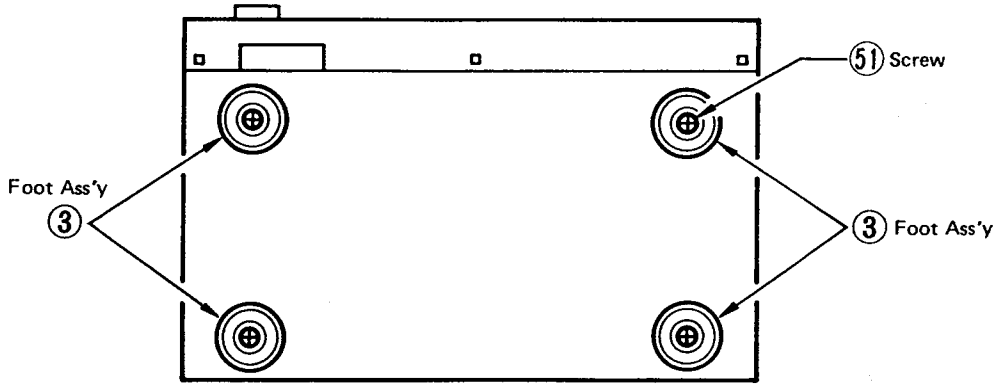
(3) When the circumambient temperature changes ±10°C, "iop1" will change ±5%. The "iop1" will also be changed by the passage of time.

(4) In case of the above conditions taking into consideration and performed the adjustment in proper way, if the HF level at pin No. 1 of TP102 in 2U-1496, and in between Es by the lateral of VR101 becomes 1V or laser values; or a jitter occurs great, the laser pick-up may be deteriorated.

DISASSEMBLY

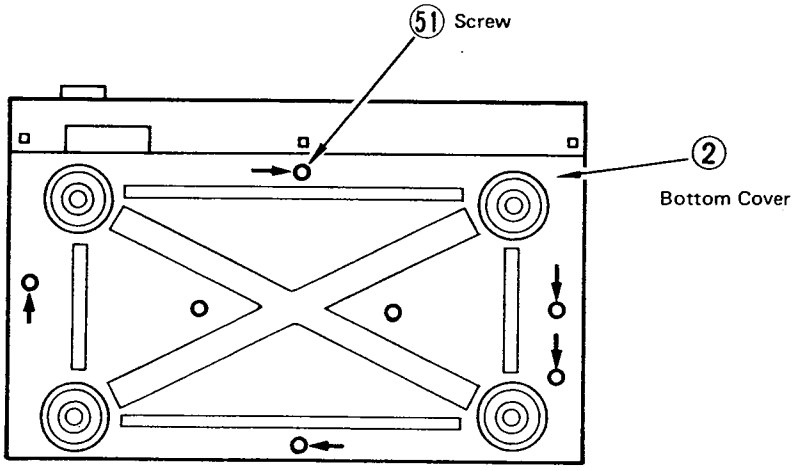
- **Foot**

Remove four screws (51) in the center of the foot (3).



- **Bottom Cover**

Remove four screws from the foots, then remove five screws (51) as per shown by arrows out of the Bottom Cover (2)

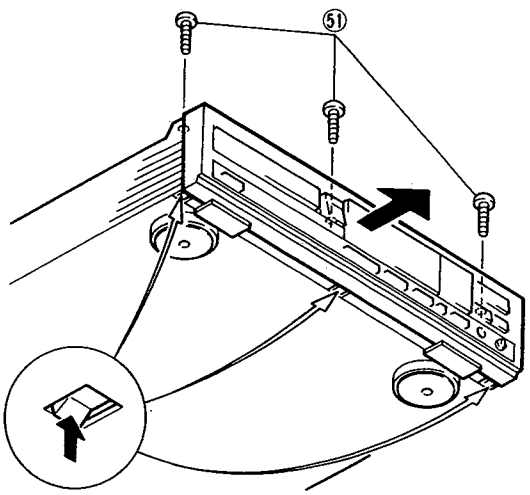


- **Top Cover**

Remove four screws (51) out of the Top Cover (24) and keep them with washers (25)

- **Front Panel**

(1) Remove three screws (51) of Front Panel upper portion.
(2) Remove three hooks of Front Panel upper portion.
(3) Draw Front Panel toward you wish pushing three hooks of its lower portion, and these hooks detach, then Front Panel detaches from Chassis.



Lightly push with a screwdriver or similar object.

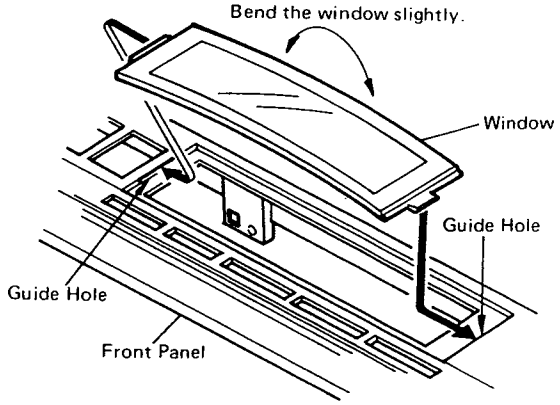
- **Push Buttons**

Push Buttons are composed of 4 kinds as (series, ten key, knob frame and open/close), and all these are of in-setting.
All ones is easily removable by pulling out the insetted part lightly from backward of Front Panel.

ASSEMBLY

- **Window**

(1) Face the Front Panel to surface. Put the left-end of window on the guide slot and insert it transversely.
(2) While bending the window inward, insert the right edge to the guide hole.



DISASSEMBLY OF MECHANISM UNIT

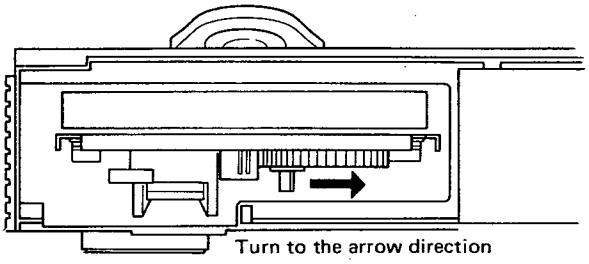
• Mechanism Unit (FG750)

(1) Turn Control gear (13) (as per exploded view of Mechanism Unit) fully clockwise viewing from frontward, confirm the clamper arm is raised and the Loader frame is out at the front, and detach pulling the Loader frame forward.

Caution:—
Since power switch terminal is situated at left-lower part of base plate, you must be sure to take power cord plug off in the detachment of Mecha Unit.

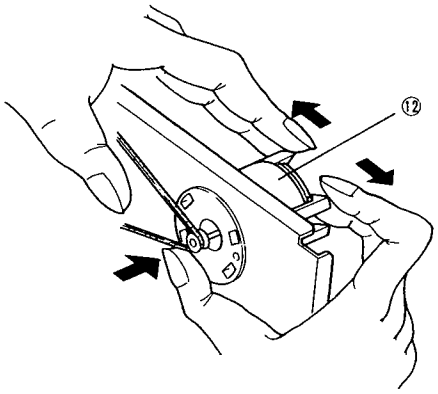
(2) Remove four special screws (52) of Mechanism Unit, and once raise the Mechanism Unit up, and then detach pulling out backward.

(Note) When remove the Mechanism Unit, be sure to use a wrist ring grounded via 1 Meg Ω resistor, and be sure not touch the laser P.U. Also, when it is necessary to remove Laser P.U. lead, be sure to short circuit the terminal (with solder bridge), before detach the lead.

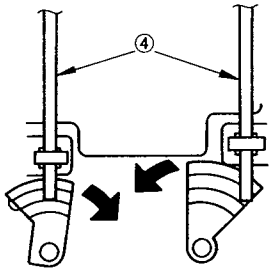


• Component parts of Mechanism Unit

(1) Loading motor (12)
Push four hooks outward with both hands and push the motor shaft with both thumbs.

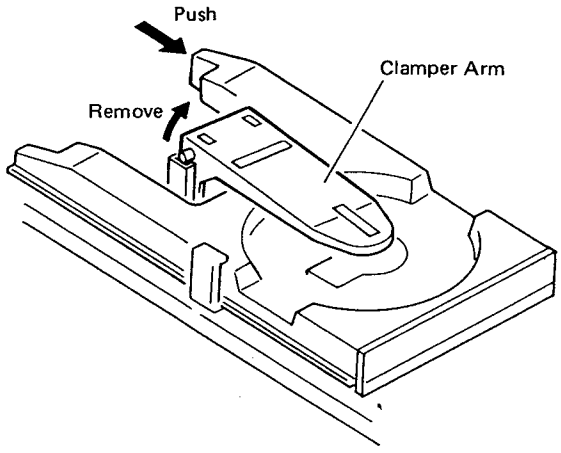


(2) Slide shaft (4)
Turn the mould boss of the slide shaft to arrow direction with a ⊕ screwdriver or finger.



(3) Slider (2)
Pry up six hooks in their center with a ⊖ screwdriver, a little strongly.

(4) How to remove the Loader Frame when the Loading Moter becomes unworkable.
Remove the left side of the clamper arm viewing from the front side, and push the loader frame ahead from the rear side strongly.

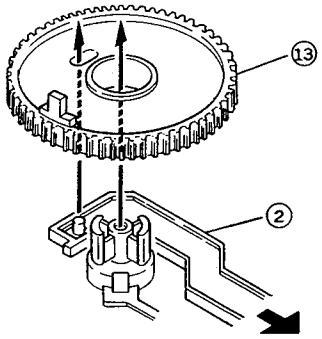


ASSEMBLY

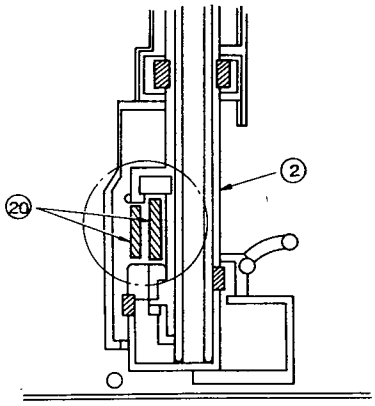
Use care to assemble the following parts, referring to the exploded view of Mechanism Unit.

• How to assemble Mechanism Unit

(1) Control gear (13)
Pull the slider (2) to arrow direction, and insert with coupling the oblong hole of the control gear to the boss of slider.

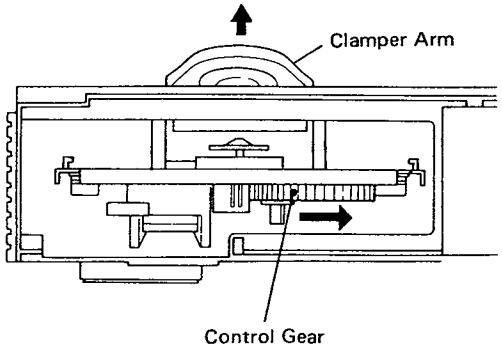


(2) Clamper arm (20) and Slider (2)
Use care so that two clamper arms seat the slider groove. Install the slider after the clamper arm affixed.



• How to assemble the Unit

(1) How to install the Loader frame (12) (as per exploded view) into the Base plate (1).
Turn round the Control gear (13) fully clockwise viewing from front side (to the position clamper arms raised up) then push the Loader frame in along the guide fully.



(2) How to install All Knobs
In all 4 kinds of knobs, push lightly in by hand to insert along the guide. Be sure to take down pause/stop knob before the setting of play knob.

MAINTENANCE SERVICE AND ADJUSTMENT

Changing and/or repairing component parts may necessitate readjustment. The microcomputer employed in this unit contains maintenance service program. All necessary adjustment can be made via operation buttons in front normally used to play the unit.

1. Initializing maintenance service program.

(1) Turn power OFF.

(2) Detach Holder switch connector (CB106) from the signal processing PCB (2U-1496), and short circuit three pins.
(The same status can be obtained by shortening No. 5 pin of TP101 to No. 3 and 4 pins of TP102.)

(3) Turn power ON. The service program initializes and displays on the track number indicator.

(4) Remove the short circuit. Reconnect the connector if it has been disconnected.
Note) When the service program is initialized, the unit comes into service use only and does not accept normal operation.

2. Button operations during the service mode.

(1) ▲ OPEN/CLOSE Button
Opens or Closes the disc holder in the state of disc rotation being stopped. Note that when the holder is in operation, all other buttons are inoperative, until the holder operation completed.
Note) Be sure to remove the short circuit or reconnect the connector which disconnected to initialize the service program. Otherwise the Open/Close does not function correctly.

(2) ■ STOP Button
Stops the system. Track number indicator displays 01. Push the button when the servo adjustment completed, or when redo it.

(3) ▶ PLAY Button
Turns focus servo on and starts the disc. When a sequential functions ends, the track number indicator displays 02. Use it to adjust tracking offset.

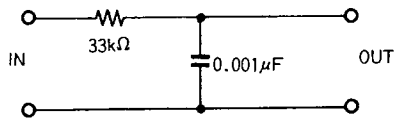
(4) ❚❚ PAUSE Button
Turns all functions of focus servo, tracking servo, slide servo and spindle servo on. When a sequential functions ends, the track number indicator displays 03. When the PLAY has already been pushed, turns both tracking servo and slide servo on.

(5) Other buttons
Other buttons previously not mentioned are for factory use. Some of the buttons have specific functions like checking IC. Operation of these buttons could invite incorrect CD player operation. Therefore never operate buttons which are not previously explained how to use. If these buttons are accidentally pushed, turn power off immediately and initialize the service program again. Also never use remote controller when the service program is in operation.

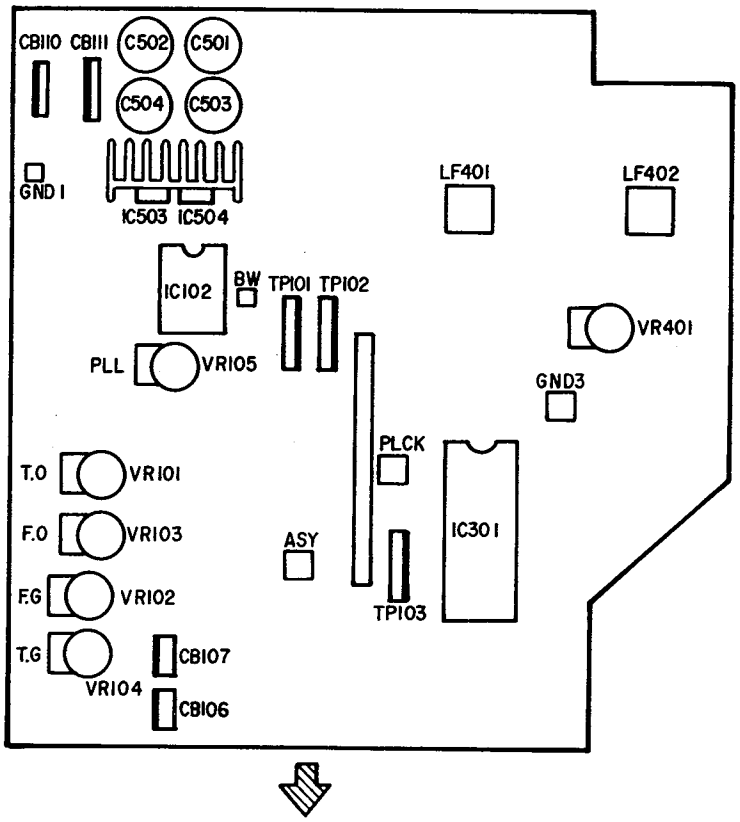
3. Adjustment

(1) Precaution to the Adjustment:
First adjust the height of turntable, etc., and then adjust the laser P.U. system and spindle motor system. That is all.
The super linear convertor employed in this unit requires no adjustment, except a specific case.

(2) Equipment required
① Dual trace oscilloscope
② Specific disk for adjustment
③ Low frequency oscillator
10 Hz ~ 10 kHz, Output: 0 V ~ 3 Vp-p
④ Frequency counter
Readable to over 5 MHz
⑤ Filter (Network) for measurement



(3) Setup



① Confirm power is OFF, detach connector CB106, short circuit pins 1, 2, 3. Then turn power ON to initialize service program. Track number indicator displays "01", then revert the connection to the former status after confirmed the figure on the indicator.

② Preset VR101, 103, 102, 104, 105 as per following.

	TO	FO	FG	TG
as	9	8	9	7 o'clock each

③ Make adjustment in the order of

1. PLL
2. Tracking offset
3. Focus gain
4. Focus offset
5. Tracking gain
6. Tracking offset (Recheck)

VR105 (PLL) 9 o'clock

VR101 (T-OFFSET) 7 o'clock

VR103 (F-OFFSET) 9 o'clock

VR102 (F-GAIN) 8 o'clock

VR104 (T-GAIN) 9 o'clock

Front Panel Side

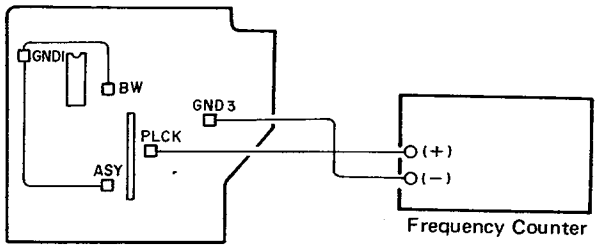
(4) PLL

① Precaution

- Confirm the service program is initialized, and the disc is not loaded or the disc stopped.
- Ground the test point "ASY" and "BW" to "GND1".

② Equipment setup

Connect test point PLCK terminal to the frequency counter + side via a 10:1 probe used for oscilloscope and ground "GND3" –side.



③ Adjust ment

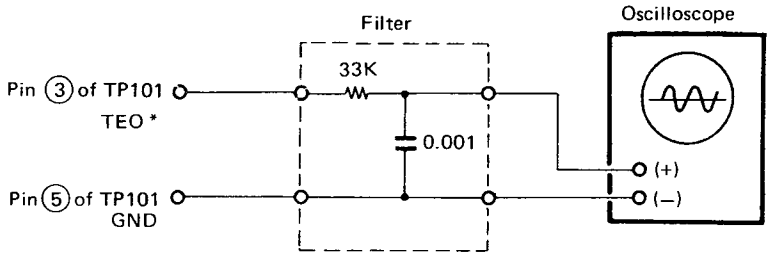
- Adjust VR105 so that the frequency counter indicates 3.55 MHz ±10 kHz (3.54 MHz ~3.56 MHz) value.

④ After the Adjustment

- Remove test point "ASY" and "BW" from "GND1".
- Disconnect frequency counter.

(5) Tracking offset

① Equipment setup



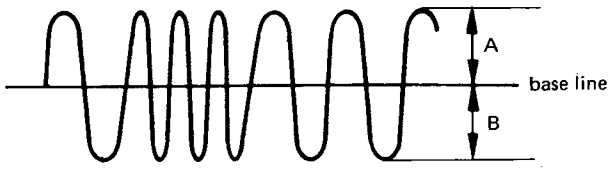
*TEO: Tracking Error Output

② Push ▲ OPEN/CLOSE button to open the holder, put the disc for adjustment on the tray, and push the button again to close the holder. When the service program is initialized, the laser P.U. is set to the optimum position.

③ Push ▶ PLAY button to start the disc.

④ Ground oscilloscope input terminal to confirm the base line, and set the oscilloscope input to DC range, 0.1V/div (when 10:1 probe is used), and sweeping time as 1 ms ~ 2 ms/div.

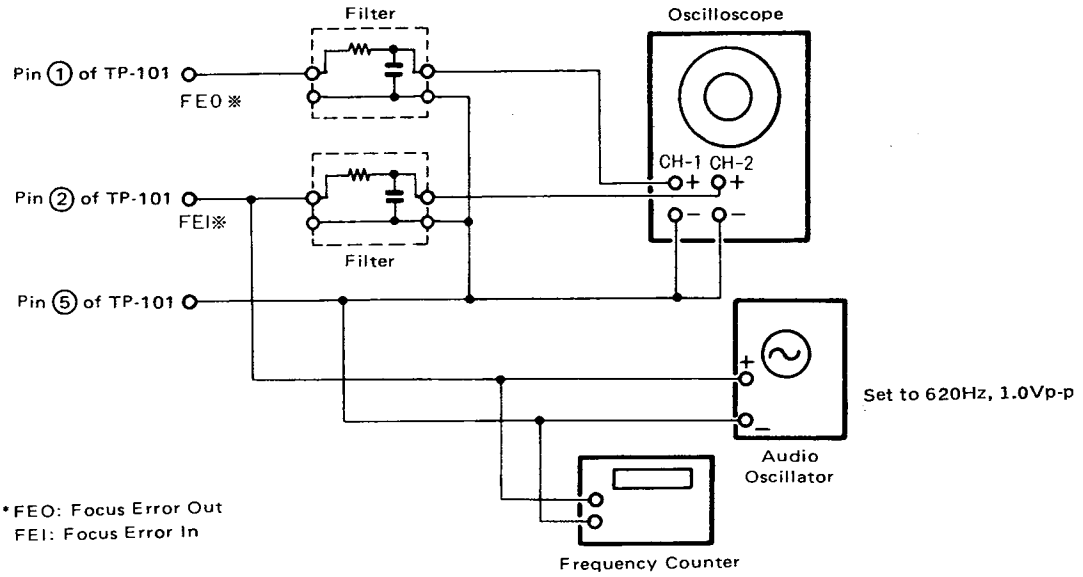
⑤ Adjust VR101 so that the amplitude of A equals B as per figure below.



(6) Focus gain

① Push ⏸ PAUSE button.

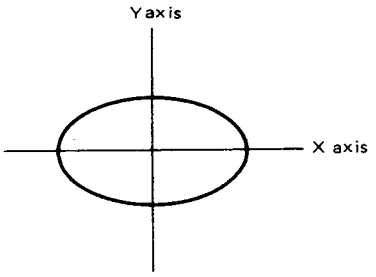
② Equipment setup



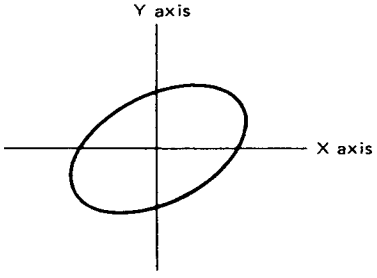
③ Adjustment

- Set low frequency oscillator output to 620 Hz, 1.0 Vp-p (±0.1 V).
- Select oscilloscope input in X-Y mode so to observe Lissajous waveform (Select DC range for both X and Y input).
- Adjust VR103 so that each Lissajous waveform symmetrizes X and Y axes. (Adjust each input phases 90°)

Note : In case using No. CA1094 for test disc, set the audio oscillator output to 580 Hz.



Correct figure



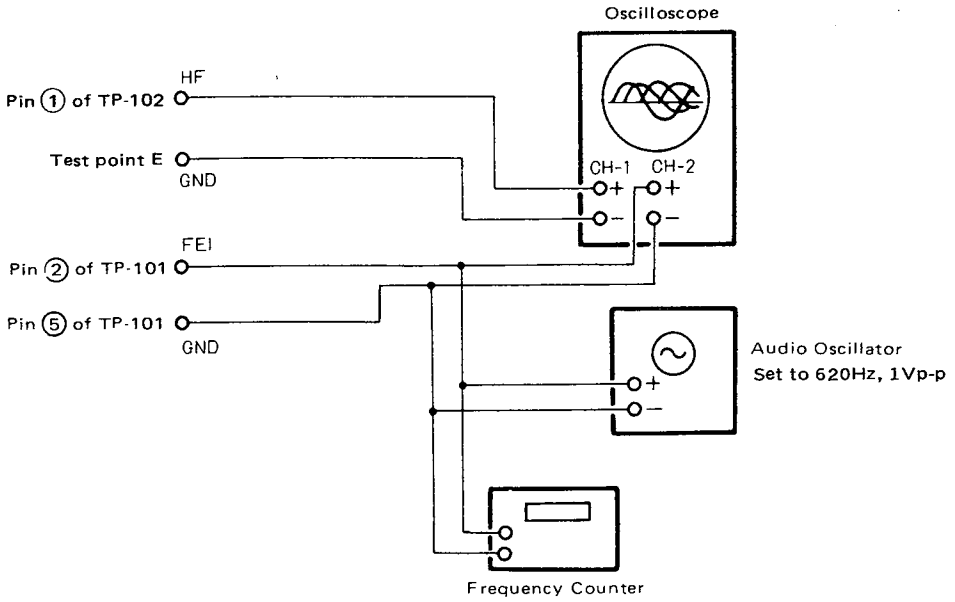
Incorrect figure

(7) Adjustment of Focus Offset

① Adjust it in the same condition as to focus gain in the state of all the servo operation by pushing ⏸ PAUSE Button except the measuring equipment connections.

② Connection of measuring equipment

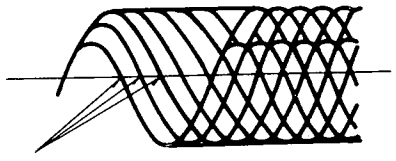
Note: Audio oscillator should be connected during the servo operation.



③ Adjustment

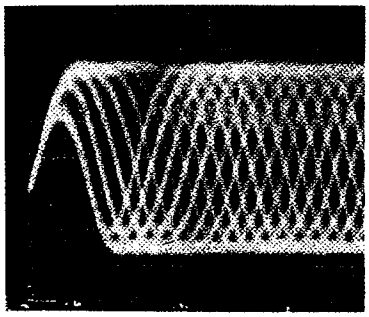
- Set the output of audio oscillator to 620 Hz, 1.0Vp-p (±0.1 V).
- Select oscilloscope input mode at "ALTERNATE" or "CHOPPER" and set it to 50 mV/div or 20 mV/div (use 10:1 probe).
  Observe by setting the sweep time to 0.2 or 0.5 μs range.

Note : In case using No. CA1094 for test disc, set the audio oscillator output to 580 Hz.



Adjust A portion for most fine waveform.

- A waveform to observe in this time called "Eye Pattern".
- Adjust VR-102 for a minimum jitter amount.

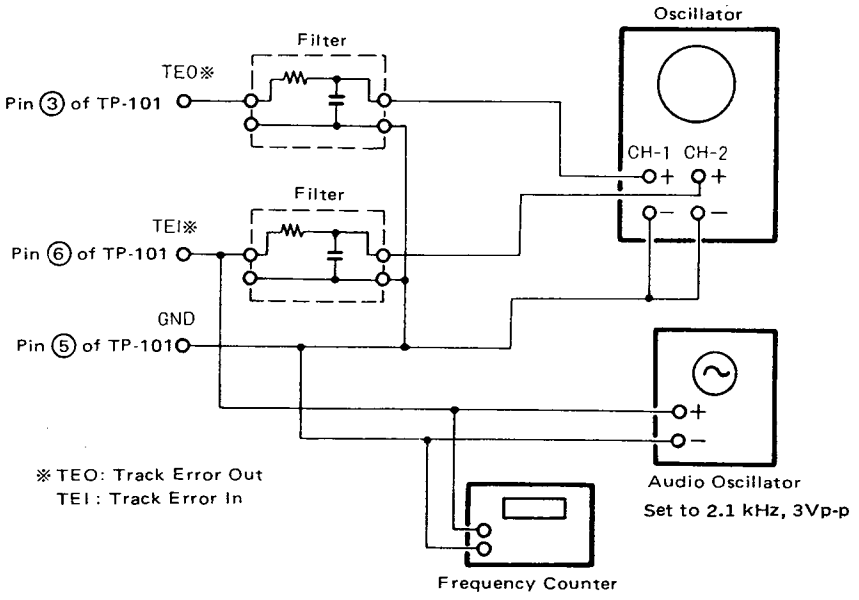


(8) Adjustment of Tracking Gain

① Adjust it in the same condition as to focus gain in the state of all screws operationed by pushing ❚❚ PAUSE Button except the measuring equipment connections.

② Audio oscillator should be connected while the servo is in operation.
If the connection is made before servo operation, causing mis-operation.
If the connection is made in failure, disconnect oscillator, push stop button (■ STOP) to stop all operations, and follow the steps from the beginning. Then push the pause button (❚❚ PAUSE) to activate the servo operation again.

③ Connection of measuring equipment.
Connect all kinds of measurement equipment setting to each Test Points of TP101 as below figures.



④ Adjustment

- Set the output of audio oscillator to 2.1 kHz ± 120 Hz 3Vp-p ±0.1 V.
- Select oscilloscope input so to observe Lissajous waveform. (Select DC range both X and Y inputs.)
- Adjust VR-104 and obtain Lissajous waveform symmetric to both X and Y axes. The waveform is the same as focus gain adjustment.

Note : In case using No. CA1094 for test disc, set the audio oscillator output to 1.8 kHz.

(9) Checking of Tracking Offset (Recheck)

① Check the adjustment performed in the previous column (5).

- Push stop button (■ STOP) to stop disc revolution.
- With a sufficient interval of time in between, push play button (▶ PLAY) twice and check that the disc starts to run.

Note: The microcomputer employed in the unit sometimes does not accept button operation. If so, push the button again, and confirm that " 02 " appears on the calendar.

- Observe a waveform and check that the height of upper and lower waveform are even. (Reference value: Difference of height between two is 5% or less.)
- If the difference is beyond the value, adjust VR-101.

② That is all to complete adjustments.

- Push the stop button (■ STOP) to stop disc revolution, and push open/close button (▲ OPEN CLOSE) to open the holder and remove the adjustment disc.

IC TERMINAL FUNCTION LIST

• Remote Control IC (LU59001) Terminal Function List

Terminal No.	Function	Terminal No.	Function
1	Serial Data Output	11	Remote Control Code Input Input Code for Remote Control out of RM577
2	+5 V		
3	Shift Clock Input	12	System Address GND Earth
4	RDY Output	13	System Address GND Earth
5	+5 V	14	System Address GND Earth
6	455 kHz OSC	15	System Address GND Earth
7	455 kHz OSC	16	GND
8	– GND Earth	17	+5 V
9	ACL Input	18	System Address +5 V
10	GND	19	+5 V
		20	VDD +5 V

CXA1081S Terminal Function

Terminal No.	Terminal Symbol	I/O	Terminal Function
1	RFI	I	Input terminal of capacitance coupled RF summing amplifier output.
2	RFO	O	Terminal for RF summing amplifier output. Check point of eye pattern.
3	RF(–)	I	Feedback input terminal of RF summing amplifier.
4	P/N	I	P-sub/N-sub shifting terminal for Laser Diode (LD). (DC voltage: at N-sub.)
5	LD	O	Output terminal of APC (Automatic Power Control) LD amplifier. CDC voltage: at N-sub, PD opened.)
6	PD	I	Input terminal of APC (Automatic Power Control) PD amplifier. (DC voltage: opened.)
7	PD1	I	Reverse input terminal of RF I-V amplifier (1). Receives a input current through A + C terminals of photo diode.
8	PD2	I	Reverse input terminal of RF IV amplifier (2). Receives a input current through B + D terminals of photo diode.
9	VC	–	At ± dual-power supply: Becomes GND. At mono-power supply: Becomes VR. (connect to pin 14.)
10	F	I	Reverse input terminal of F IV amplifier. Receives a input current through F terminal of photo diode.
11	E	I	Reverse input terminal of E IV amplifier. Receives a input current through E terminal of photo diode.
12	EO	O	Output terminal of E IV amplifier.
13	EI	I	Feedback input terminal of E I-V amplifier. For gain controlling of E I-V amplifier.
14	VR	O	Output terminal of 2 DC voltages ($V_{CC} + V_{EE}$).
15	CC2	I	Input terminal of capacitance coupled defect bottom hold output.
16	CC1	O	Output terminal of defect bottom hold.
17	V_{EE}	–	At ± dual-power supply: Becomes negative power supply terminal. At mono-power supply: Becomes GND.
18	FE BIAS	I	Bias terminal for non-reverse side of focus error amplifer. For CMR controlling of focus error amplifer.
19	FE	O	Output terminal of focus error amplifier.
20	TE	O	Output terminal of tracking error amplifier.
21	DEFECT	O	Output terminal of defect comparator. (DC voltage: (Connect a 10 kΩ load resistance.))
22	MIRR	O	Output terminal of mirror comparator. (DC voltage: Connect a 10 kΩ load resistance.)
23	CP	I	Connecting terminal for mirror hold capacitor. Non-reverse input terminal of mirror comparator.
24	CB	I	Connecting terminal for defect buttom hold capacitor.
25	D GND	–	At ± dual-power supply: GND. At mono-power supply: GND (V_{EE}).
26	ASY	I	Input terminal of auto-asymmetry control.
27	EFM	O	Output terminal of EFM comparator. (DC voltage: Connect a 10 kΩ load resistance.)
28	FOK	O	Output terminal of focus OK comparator. (DC voltage: Connect a 10kΩ load resistance.)
29	$\overline{\text{LD ON}}$	I	ON/OFF shifting terminal for laser diode (LD). (DC voltage: At LD ON.)
30	V_{CC}	–	Positive power supply terminal.

CXA1082AS Terminal Function

Terminal No.	Terminal Symbol	Terminal Function
2	DFCT	Defect signal input terminal. Defect measure circuit activates at "H".
3	TE	Tracking error signal input terminal.
4	TZC	Tracking zero cross comparator input terminal.
5	ATSC	Input terminal of ATSC detecting window comparator.
6	FE	Focus error signal input terminal.
8	FGD	In case of reducing higher range gain of focus servo, connect a capacitor between this terminal and terminal number (9).
9	FS3	Shifts higher range gain of focus servo by FS3 ON/OFF.
10	FLB	Terminal for external time constant to increase lower range of focus servo.
11	FEO	Focus drive output.
12	FE(–)	Reverse input terminal for focus amplifier.
13	SRCH	Terminal for external time constant to wake focus search waveform.
14	TGU	Terminal for external time constant to shift higher range gain of tracking.
15	TG2	Terminal for external time constant to shift higher range gain of tracking.
17	TAO	Tracking drive output.
18	TA(–)	Reverse input terminal for tracking amplifier.
19	SL(+)	Non-reverse input terminal of sled amplifier.
20	SLO	Sled drive output.
21	SL(–)	Reverse input terminal of sled amplifier.
22	SSTOP	Terminal for limit switch ON/OFF to detect disc inner most circle.
23	FSET	Terminal to compensate peak in focus tracking phase, and for setting f0 in CLV LPF.
24	SENS	Terminal to output FZC, AS, TZC, SSTOP, BUSY by command from CPU.
26	C. OUT	Terminal to output signal for track number count.
27	DIRC	Terminal is used at the time of 1 tracj jump. A 47 kΩ pull up resistor is included.
28	XRST	Reset input terminal. Resets at "L".
29	DATA	Serial data input from CPU.
30	XLT	Latch input from CPU.
31	CLK	Serial data transfer clock input from CPU.
33	BW	Terminal for external time constant of loop filter.
34	PDI	Input terminal of CX23035/CXD1135 phase comparator.
35	ISET	Delivers a current to set the height of focus search, track jump, and sled kick.
36	VCOF	Resistance value between this terminal and terminal (37) is nearly proportion to VCO free-run frequency.
38	C864	Output terminal of 8.64 MHz VCO.
39	LOCK	Reckless drive protection circuit activates at "L". A 47 kΩ pull up resistor is included.
40	MDP	Terminal to connect MDP terminal of CX23035/CXD1135.
41	MON	Terminal to connect MON terminal of CX23035/CXD1135.
42	FSW	Terminal for external LPF time constant of CLV servo aberration signal.
43	SPDL(–)	Reverse input terminal for spindle drive amplifier.
45	SPDLO	Sprindle drive output.
46	WDCK	Clock input for auto-sequence. Normally applied 88.2 kHz.
47	FOK	FOK signal input terminal.
48	MIRR	Mirror signal input terminal.

CXD1135Q Terminal Function

Terminal No.	Terminal Symbol	I/O	Terminal Function
1	FSW	O	Output to shift time constant of output filter for spindle motor.
2	MON	O	ON/OFF control output for spindle motor.
3	MDP	O	Drive output for spindle motor. Rough control at CLV-S mode and phase control at CLV-P mode.
4	MDS	O	Drive output for spindle motor. Speed control at CLV-P mode.
5	EFM	I	Input of EFM signal from RF amplifier.
6	ASY	O	Output to control slice level of EFM signal.
7	LOCK	O	Sampling GFS signal by WFCK/16 and if it is "H", delivers "H"; if it is continuously "L" 8 times, delivers "L".
8	VCOO	O	VCO output. When EFM signal is locked, f = 8.6436 MHz.
9	VCOI	I	VCO input.
10	TEST	I	(0V).
11	PDO	O	Phase comparing output for EFM signal and VCO/2.
12	Vss	–	GND (0V).
13	CLK	I	Serial data transfer clock input from CPU. Latches data by rising edge of clock.
14	XLT	I	Input of Latch from CPU. Latches 8-bit shift register data (serial data from CPU) to each register.
15	DATA	I	Input of serial data from CPU.
16	XRST	I	System reset input. Resets at "L".
17	CNIN	I	Input of tracking pulse.
18	SENS	O	Anser to address, output internal condition.
19	MUTG	I	Input of muting. When internal register A's ATTM is in "L", and MUTG is in "L" for normal condition; "H" for no sound condition.
20	CRCF	O	Output of CRC check result of sub-code Q.
21	EXCK	I	Clock input for serial output of sub-code.
22	SBSO	O	Serial output of sub-code.
23	SUBQ	O	Q output of sub-code.
24	SCOR	O	Output of sub-code sync. S0 + S1.
25	SQCK	I/O	Reading clock of sub-code Q.
26	SQEX	I	Selection input of SQCK. (Refer to page .)
27	DOTX	O	Digital out output. (When CXD1130Q or DO is OFF, output $\overline{\text{WFCK}}$.)
28	GFS	O	Output of indication for frame sync lock condition.
29	DB08	I/O	Data terminal of external RAM. DATA8 (MSB).
30	DB07	I/O	Data terminal of external RAM. DATA7.
31	DB06	I/O	Data terminal of external RAM. DATA6.
32	DB05	I/O	Data terminal of external RAM. DATA5.
33	V_{DD}	–	Power supply (+5V).
34	DB04	I/O	Data terminal of external RAM. DATA4.
35	DB03	I/O	Data terminal of external RAM. DATA3.
36	DB02	I/O	Data terminal of external RAM. DATA2.
37	DB01	I/O	Data terminal of external RAM. DATA1 (LSB).
38	RA01	O	Address output of external RAM. ADDR01 (LSB).
39	RA02	O	Address output of external RAM. ADDR02.
40	RA03	O	Address output of external RAM. ADDR03.
41	RA04	O	Address output of external RAM. ADDR04.
42	RA05	O	Address output of external RAM. ADDR05.
43	RA06	O	Address output of external RAM. ADDR06.
44	RA07	O	Address output of external RAM. ADDR07.
45	RA08	O	Address output of external RAM. ADDR08.

Terminal No.	Terminal Symbol	I/O	Terminal Function
46	RA09	O	Address output of external RAM. ADDR09.
47	RA10	O	Address output of external RAM. ADDR10.
48	RA11	O	Address output of external RAM. ADDR11.
49	RAWE	O	Write enable signal output for external RAM. (Active at "L".)
50	RACS	O	Chip select signal output for external RAM. (Active at "L".)
51	C4M	O	Dividing output of X'tal. f = 4.2336 MHz.
52	V_{SS}	—	GND (0V).
53	XTAI	I	X'tal oscillation circuit input. By selecting of mode, f = 8.4672 MHz or 16.9344 MHz.
54	XTAO	O	X'tal oscillation circuit output. By selecting of mode, f = 8.4672 MHz or 16.9344 MHz.
55	MD1	I	Mode selection input 1.
56	MD2	I	Mode selection input 2.
57	MD3	I	Mode selection input 3.
58	SLOB	I	Code switching input for audio data output. At "L" for 2's compliment output; at "H" for binary output.
59	PSSL	I	Mode switching input for audio data output. At "L" for serial output; at "H" for parallel output.
60	APTR	O	Control output for aperture compensation. In "H" for R-ch.
61	APTL	O	Control output for aperture compensation. In "H" for L-ch.
62	DA01	O	At PSSL = "H" for DA01 (LSB of parallel voice data) output. At PSSL = "L" for C1F1 output.
63	DA02	O	At PSSL = "H" for DA02 output; PSSL = "L" for C1F2 output.
64	DA03	O	At PSSL = "H" for DA03 output; PSSL = "L" for C2F1 output.
65	DA04	O	At PSSL = "H" for DA04 output; PSSL = "L" for C2F2 output.
66	DA05	O	At PSSL = "H" for DA05 output; PSSL = "L" for C2FL output.
67	DA06	O	At PSSL = "H" for DA06 output; PSSL = "L" for C2PO output.
68	DA07	O	At PSSL = "H" for DA07 output; PSSL = "L" for RFCK output.
69	DA08	O	At PSSL = "H" for DA08 output; PSSL = "L" for WFCK output.
70	DA09	O	At PSSL = "H" for DA09 output; PSSL = "L" for PLCK output.
71	DA10	O	At PSSL = "H" for DA10 output; PSSL = "L" for UGFS output.
72	DA11	O	At PSSL = "H" for DA11 output; PSSL = "L" for GTOP output.
73	V_{DD}	—	Power supply (+5V).
74	DA12	O	At PSSL = "H" for DA12 output; PSSL = "L" for RAOV output.
75	DA13	O	At PSSL = "H" for DA13 output; PSSL = "L" for C4LR output.
76	DA14	O	At PSSL = "H" for DA14 output; PSSL = "L" for C21O output.
77	DA15	O	At PSSL = "H" for DA15 output; PSSL = "L" for C21O output.
78	DA16	O	At PSSL = "H" for DA16 (MSB of parallel voice data) output. At PSSL = "L" for DATA output.
79	WDCK	O	Strobe signal output. At DF ON, 176.4 kHz. At CXD1125Q or DF OFF, 88.2 kHz.
80	LRCK	O	Strobe signal output. At DF ON, 88.2 kHz. At CXD1125Q or DF OFF, 44.1 kHz.

Note:

C1F1: ┐ Monitor output for error correction state what C1 is at
C1F2: ┘ decode.

C2F1: ┐ Monitor output for error correction state what C2 is at
C2F2: ┘ decode.

C2FL: Correction state output. Becomes "H" when C2 system in which presently under correction is unable to correct.

C2PO: C2 pointer indication output. Synchronizes with audio data output.

RFCK: Read frame clock output. 7.35 kHz of X'tal system.

WFCK: Write frame clock output. 7.35 kHz when locked on to X'tal system.

$\overline{\text{PLCK}}$: VCO/2 output. When locked to EFM signal, f = 4.3218 MHz.

UGFS: Output of unprotected frame sync pattern.

GTOP: Indication output of frame synchro in protected condition.

RAOV: Overflow and underflow indication outputs of ±4 frame jitter absorbing RAM.

C4LR: Strobe signal. At DF ON, 352.8 kHz. At CXD1125Q or DF OFF, 176.4 kHz.

$\overline{\text{C21O}}$: Reverse output of C21O.

C21O: Bit clock output. At DF ON, 4.2336 MHz. At CXD1125Q or DF OFF, 2.1168 MHz.

DATA: Serial data output of audio signal.

PARTS LIST OF P.W. BOARD

2U-1496 SERVO & SIG. PRO. UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC101	2620842002	CXA-1081S	
IC102	2620843001	CXA-1082AS	
IC103	2630257001	M5218P	
IC301	2620880006	HD63A05Y0C39P	
IC302	2630423000	M51953B	
IC303	2620448008	HD74LS42P	
IC304~306	2630298002	LB1240	
IC307	2620635002	LU59001	
IC401	2620844013	SM5807C	
IC402	2620743004	PCM56HP	
IC403	2620522005	TC-4053BP	
IC404	2620419008	HD14053BP	
IC405,406	2630360008	NE5532	
IC407~410	2630257001	M5218P	
IC411	2620640000	MN6632A	
IC412	2630198005	NJM4556D	
IC501	2760405008	S1WB(A)10	
IC502	2680047009	NJM7805M	
IC503	2630501003	NJM79M05FA	
IC504,505	2680055004	ICP-F15	
TR101	2720025004	2SB562(C)	
TR102	2740123009	2SD1985(P/Q)	
TR103	2720085002	2SB941A(Q)/(P)	
TR104	2740036002	2SD468(C)	
TR105	2720025004	2SB562(C)	
TR106	2740036002	2SD468(C)	
TR107	2720025004	2SB562(C)	
TR108	2740036002	2SD468(C)	
TR109	2720025004	2SB562(C)	
TR110	2740036002	2SD468(C)	
TR111	2720025004	2SB562(C)	
TR301	2690025008	RN1202(10K-10K)	
TR302,303	2690026007	RN2202(10K-10K)	
TR304	2690025008	RN1202(10K-10K)	
TR401,402	2740124008	2SD1504(E/F)	
TR403,404	2710101022	2SA933(Q)	
TR405	2740124008	2SD1504(E/F)	
TR406	2710101022	2SA933(Q)	
TR407	2740124008	2SD1504(E/F)	
TR408	2710101022	2SA933(Q)	
D301~305	2760370007	1SS106	
D306	2760417009	1SS270TE	
D501	2760433009	DSM1A2	
D502	2760224014	HZ30-2	
D503	2760303003	HZ6C-2	
D504	2760433009	DSM1A2	

Ref. No.	Part No.	Part Name	Remarks
RESISTOR GROUP			
VR101,102	2116064051	V06PB203	
VR103	2116064006	V06PB103	F,OFF
VR104	2116064051	V06PB203	
VR105	2116064064	V06PB102	PLL
VR401	2116064022	V06PB104	SLC
	2110459002	V1220Q25FA103	H/P
CAPACITOR GROUP			
C101	2544260061	CE04W1H3R3M	3.3μF/50V
C102	2544250048	CE04W1C101M	100μF/16V
C103	2533614000	CC45SL1H300J	30pF/50V
C104	2551120055	CQ93M1H272J	0.002μF/50V
C106	2544252024	CE04W1A470M	47μF/10V
C107	2531024003	CK45F1H103Z	0.01μF/50V
C108	2544260032	CE04W1HR47M	0.47μF/50V
C109	2551121025	CQ93M1H103J	0.01μF/50V
C111	2551120068	CQ93M1H332J	0.0033μF/50V
C112	2551120024	CE04W1A470M	47μF/10V
C113	2531024003	CK45F1H103Z	0.01μF/50V
C114	2533645008	CC45SL1H561J	560pF/50V
C115	2544252024	CE04W1A470M	47μF/10V
C116	2531024003	CK45F1H103Z	0.01μF/50V
C117	2551120068	CQ93M1H332J	0.0033μF/50V
C118	2551121067	CQ93M1H223J	0.022μF/50V
C119	2561034018	CF93A1H333J	0.033μF/50V
C120	2561034050	CF93A1H683J	0.068μF/50V
C121,122	2544260061	CE04W1H3R3M	3.3μF/50V
C123	2551121025	CQ93M1H103J	0.01μF/50V
C124	2544252024	CE04W1A470M	47μF/10V
C125	2531024003	CK45F1H103Z	0.01μF/50V
C126	2561034076	CF93A1H104J	0.1μF/50V
C127	2551121025	CQ93M1H103J	0.01μF/50V
C128	2544254019	CE04W1C220M	22μF/16V
C129	2544260045	CE04W1H010M	1μF/50V
C131,132	2533627000	CC45SL1H101J	100pF/50V
C133	2533603008	CC45SL1H100D	10pF/50V
C134	2543055002	CE04D1V4R7MBP	4.7μF/35V
C135	2561034076	CF93A1H104J	0.1μF/50V
C136	2533627000	CC45SL1H101J	100pF/50V
C137	2551120000	CQ93M1H102J	0.001μF/50V
C138	2561034076	CF93A1H104J	0.1μF/50V
C141	2551121025	CQ93M1H103J	0.01μF/50V
C145	2544254077	CE04W1C470M	47μF/16V
C146	2531024003	CK45F1H103Z	0.01μF/50V
C147	2551120097	CQ93M1H562J	0.0056μF/50V
C148	2531024003	CK45F1H103Z	0.01μF/50V
C149~151	2539036006	CK45=1E104Z	0.1μ/25
C301	2544260029	CE04W1HR33M	0.33μ/50
C302	2544252037	CE04W1A101M	100μF/10V

Ref. No.	Part No.	Part Name	Remarks
C303	2531024003	CK45F1H103Z	0.01μF/50V
C304,305	2533635005	CC45SL1H221J	220pF/50V
C312	2544254048	CE04W1C101M	100μF/16V
C313	2531024003	CK45F1H103Z	0.01μF/50V
C314	2544254048	CE04W1C101M	100μF/16V
C315	2531024003	CK45F1M103Z	0.01μF/25V
C401,402	2533611003	CC45SL1H200J	20pF/50V
C403	2544163016	CE04W1C331M	330μF/16V
C404	2539002001	CK45=1E104Z	0.1μF/25V
C405	2544163016	CE04W1C331M	330μF/16V
C406~408	2539002001	CK45=1E104Z	0.1μF/25V
C409,410	2533645008	CC45SL1H561J	560pF/50V
C411~414	2531024003	CK45F1H103Z	0.01μF/50V
C415	2533638002	CC45SL1H301J	300pF/50V
C417,418	2531055027	CK45B1H821K	821pF/50V
C419,420	2551120026	CQ93M1H152J	0.0015μF/50V
C421,422	2551120055	CQ93M1H272J	0.0027μF/50V
C423,424	2533638002	CC45SL1H301J	300pF/50V
C425~428	2531024003	CK45F1H103Z	0.01μF/50V
C429,430	2551120071	CQ93M1H392J	0.0039μF/50V
C431,432	2533629008	CC45SL1H121J	120pF/50V
C433,434	2544159004	CE04W1V101M	100μF/35V
C435	2531024003	CK45F1H103Z	0.01μF/50V
C437	2531024003	CK45F1H103Z	0.01μF/50V
C439,440	2533615009	CC45SL1H330J	33pF/50V
C441,442	2544159004	CE04W1V101M	100μF/35V
C443~445	2531024003	CK45F1H103Z	0.01μF/50V
C447~449	2531024003	CK45F1H103Z	0.01μF/50V
C450,451	2544254048	CE04W1C101M	100μF/16V
C452	2531024003	CK45F1H103Z	0.01μF/50V
C453	2544254048	CE04W1C101M	100μF/16V
C462,463	2531024003	CK45F1H103Z	0.01μF/50V
C464	2544163003	CE04W1C221M	220μF/16V
C465	2531024003	CK45F1H103Z	0.01μF/50V
C466	2533627000	CC45SL1H101J	100pF/50V
C467	2533616008	CC45SL1H360J	36pF/50V
C468,469	2531024003	CK45F1H103Z	0.01μF/50V
C473,474	2531024003	CK45F1H103Z	0.01μF/50V
C475	2544163003	CE04W1C221M	220μF/16V
C501	2544255704	CE04W1C332MC (SME)	3300μF/16V
C502	2544254792	CE04W1C222MC (SME)	2200μF/16V
C503,504	2544254789	CE04W1C102MC (SME)	1000μF/16V
C505	2544180002	CE04W1J470M	47μF/63V
C506	2544196041	CE04W1H010M	1μF/50V
C507	2544260087	CE04W1H100M	10μF/50V

Ref. No.	Part No.	Part Name	Remarks
OTHER PARTS GROUP			
L401	2350016001	INDUCTOR(100K)	
LF401,402	2350044002	L.F.P.COIL	
X301	3990035001	CST6.00MT	
X302	2610037005	CSB455E	
X401	3990036000	X'TAL8.4672MHz	
	4990086004	SBX-1532-01	
	4170307008	HEAT SINK	
	2048114037	4P PIN JACK	
	2124388004	TACT SWITCH	
	2048209007	H/P JACK	
	2120274002	POWER SWITCH	
	3934041006	FIPIO SM7(FL TUBE)	
	4122007000	EARTH PLATE	
TP101~103	2050190065	6P NH CONN.BASE	
CB101	2050321083	8P CONN.BASE(RED)	
CB102,111	2050271081	8P CONN.BASE	
CB103	2050322037	3P CONN.BASE(BLUE)	
CB106	2050321038	3P CONN.BASE(RED)	
CB107,108	2050271036	3P PH CONN.BASE	
CB109	2050323036	3P CONN.BASE(BLACK)	
CB110	2050271065	6P PH CONN.BASE	
CB113	2050271052	5P PH CONN.BASE	
CC301	2046109015	15P SAN CONN.BASE	
CC302	2042204011	8P DA-DA CONN.BASE	
CC303	2042234023	7P DA-DA CONN.BASE	
CC304	2040197010	6P DA-DA CONN.BASE	
CC111	2042231000	8P SAN RIBBON CORD	
CC112	2034454002	3P DA-DA CONN.CORD	
CC113	2038165012	5P SAN RIBBON CORD	
CC114	2034454015	3P DA-DA CONN,CORD	
KU-5862	DIGITAL SIG. PRO UNIT		
IC001	2620736008	CXD1125	
IC002	2620673006	HM6116FP-4	
C-003	2539036006	CK45=1E104Z	0.1μF/25V
C-004	2544254051	CE04W1C221M(SME)	220μF/16V

• The carbon resistors rated at ¼W are not listed herein.

PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
1	1030947527	CHASSIS	
	1030947530	CHASSIS	E1 only
2	1020260104	BOTTOM COVER	
3	1040157200	FOOT ASS'Y	
4	4122012105	EARTH BRACKET	
5	4122008012	BUSHING PLATE	
6	2U−1496	SERVO & SIG.UNIT	
7	4770096007	PUSH RIVET	
8	1130953000	P.SW LEVER ASS'Y	
9	FG−750	CD MECHA.UNIT	
10	4620067209	BUSHING	
11	1120475006	H/P KNOB	
12	4310219406	LOADER FRAME ASS'Y	
⚠13	2335613005	POWER TRANS	E2,EA,EK
	2335614004	POWER TRANS	E1
	2335610008	POWER TRANS	EC,EU
⚠14	2062002031	AC CORD WITH PLUG	E2
	2062025005	AC CORD WITH PLUG	EA
	2006031026	AC CORD WITH PLUG	E1
	2062061001	AC CORD WITH PLUG	EC,EU
	2062024006	AC CORD WITH LABEL	EK
⚠15	2030150009	WIRE CONNECTOR	
⚠16	4450056008	CORD BUSH	
17	PFO1A51	FRONT PANEL SUB ASS'Y	
18	1460890202	FRONT PANEL ASS'Y	
19	1130954203	KNOB FRAME	
20	1130968105	TENKEY ASS'Y	
21	1130957103	KNOB SERIES	
22	1130952001	OP/CL KNOB	
23	4250199204	LOADER PANEL	
24	1020284009	TOP COVER	
25	1460772003	TOP COVER WASHER	
26	4990086004	R/C RECEIVER	
27	3934041006	FIP 10SM7	
28	2048114037	4P PIN JACK	
29	2048209007	H/P JACK	
30	2110459002	V1220Q25FA103	
⚠31	2123315023	VOLTAGE SELECTOR	E1 only
32	4150380003	INSULATING COVER	E1 only
33	4122330104	EARTH PLATE(FM)	
34	4122333004	EARTH PLATE(H/P)	
35	4122327104	EARTH PLATE(B)	
36	1050748007	BOTTOM PLATE	
37	4150423009	SHEET	
50	4737509016	4×10CBTS(P)-B	
51	4737508017	3×10CBTS(P)-B	
52	4737514001	SPECIAL SCREW	
53	4737501027	3×16CBTS(P)-Z	E1 only

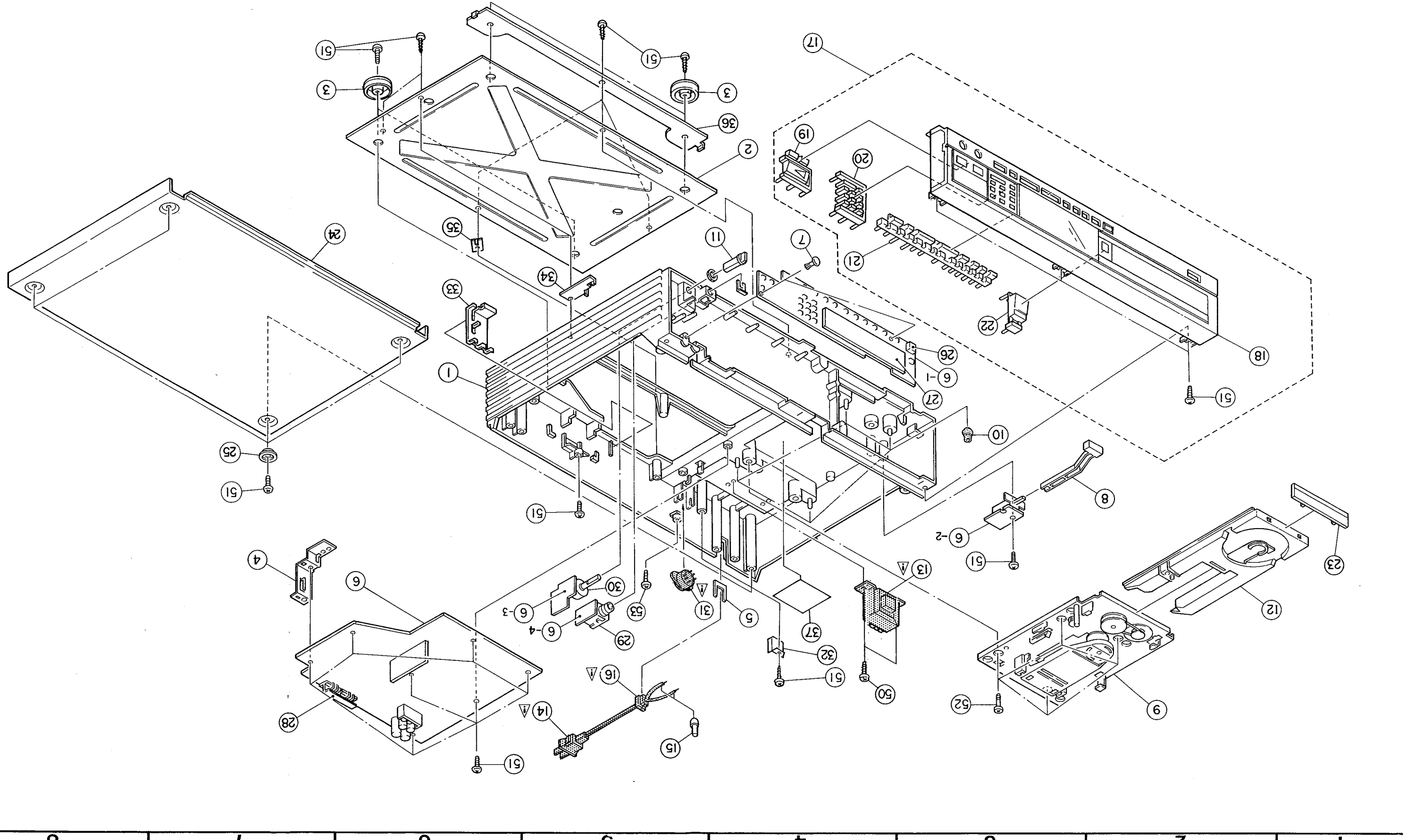
PARTS LIST OF PACKING & ACCESSORIES

Ref. No.	Part No.	Part Name	Remarks
	5030623203	CUSHION ASS'Y	
	5011191039	CARTON CASE	
	5050038030	POLY COVER	
	5111539009	INST.MANUAL	E2,EA,E1,EC,EK
	5111540001	INST.MANUAL	EU
	5111541000	INST.MANUAL	E2
	2032195004	2P PIN CORD	
	4990083007	RC203	
	2033667007	PLUG ADAPTER	E1 only
	5131167008	CONTROL CARD	E2 only
	5150388004	DCI WARRANTY	E1 only
	5118153006	SAFETY INSTRUCTION	EU only
	5150418000	DAI WARRANTY HOME	EU only
	5138266009	DANGEROUS MARK	EC,EU
	5130209019	NOTICE SHEET	EA
	5150359004	CAUTION SHEET	E1
	5131220000	CAUTION LABEL	E2,EA,EC,EU,EK
	5130985003	INST.LABEL	E2,EA,EK
	5158030008	PRESET LABEL	E1
	5131138105	CSA CERTIF LABEL	E1
	5131222008	DATE LABEL	EC,EU

WARNING:
Parts marked with ⚠ and/or shading have special characteristics important to safety.
Be sure to use the specified parts for replacement.

Remarks symbols in the parts list refer to the following countries and areas.

EA:	Australia	EC:	Canada
E1:	Multiple voltage model	EU:	U.S.A.
E2:	European continent	EK:	United Kingdom

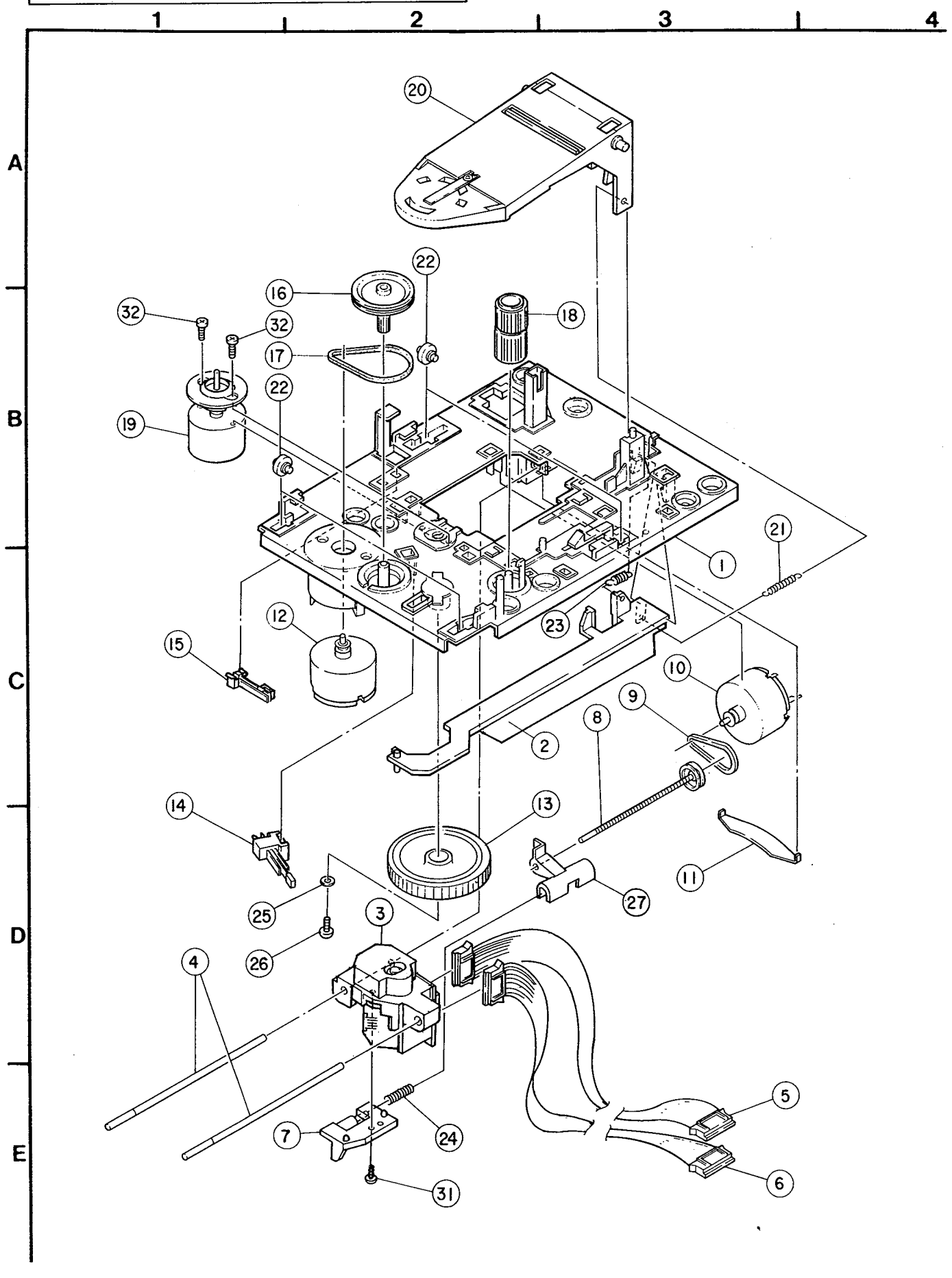


EXPLODED VIEW

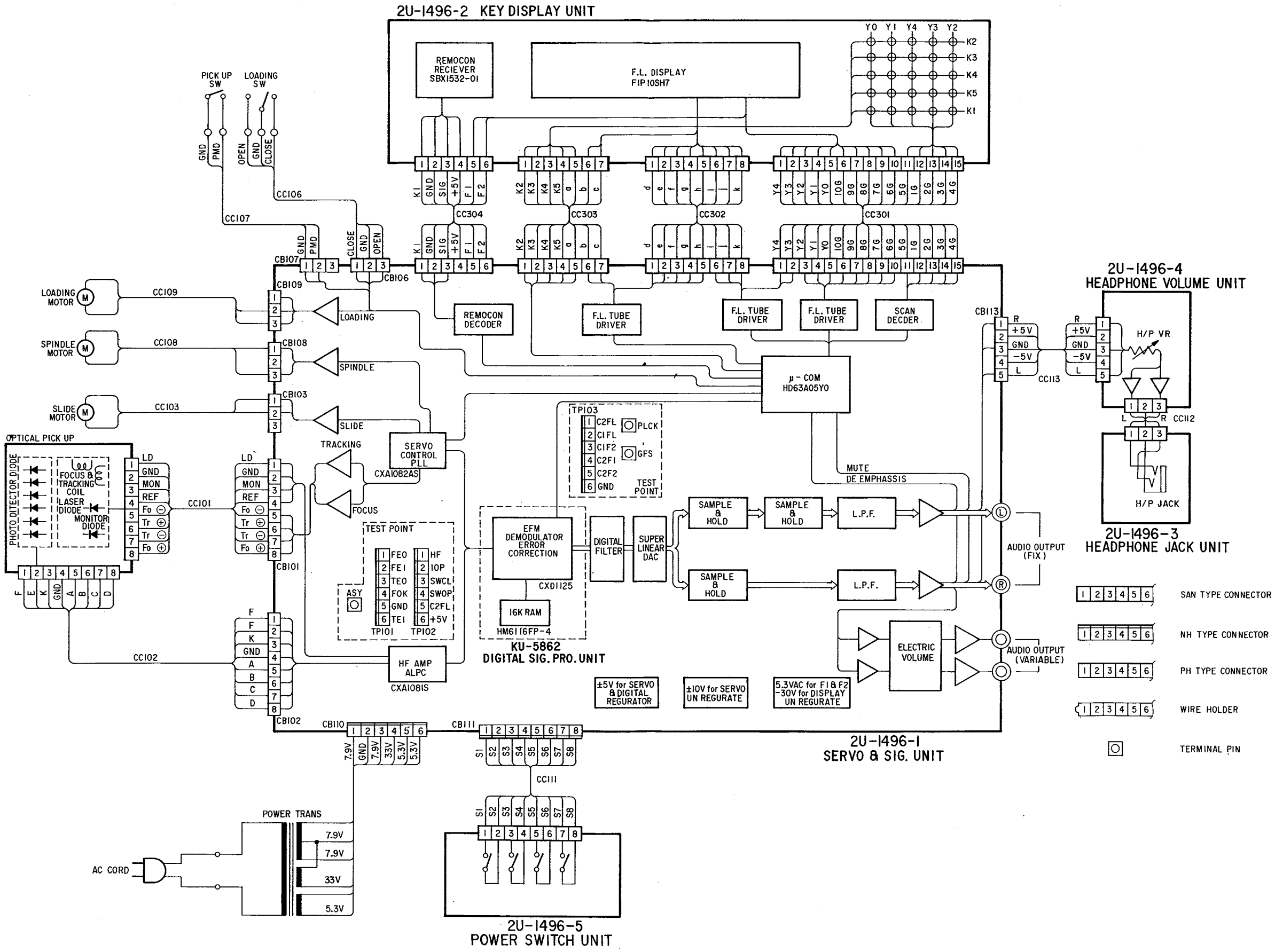
PARTS LIST OF FG-750 MECHA UNIT

Ref. No.	Part No.	Part Name	Remarks
1	4110671406	BASE PLATE	
2	4350108302	SLIDER	
3	4999001006	LASER P.U(KSS-152A)	
4	4310224103	SLIDE SHAFT(M)	
5	2042159014	8P PH CON.CORD	RED
6	2042159001	8P PH CON.CORD	WHITE
7	4359001002	P.U ARM	
8	PS01A32	SHAFT SCREW SUB ASS'Y	
9	4230044036	BELT	
10	PS01A33	SLIDE MOTOR SUB ASS'Y	
11	4122013007	MOTOR PLATE	
12	PL01A39	LOADING.M.SUB ASS'Y	
13	4240115308	CONTROL GEAR	
14	2124613009	LEAF SW(O/C)SUB ASS'Y	
15	2124675005	LEAF.SW(PU)SUB ASS'Y	
16	4240110002	PULLEY GEAR	
17	4230044049	BELT	
18	4240118208	PINION GEAR ASS'Y	
19	PS01A31	SPINDLE M.SUB ASS'Y	
20	4330461412	CLAMPER ARM.G.ASS'Y	
21	4630467006	SLIDER SPRING	
22	4250170003	SLIDER ROLLER	
23	4630529009	SPRING(BIAS)	
24	4630527001	SPRING(DLIVE)	
25	4751106042	WASHER	
26	4737508017	3×10CBTS(P)-B	
27	4359002108	DRIVE NUT	
31	4713822005	2×6 CBTS(Z)-B	
32	4713102013	2×5 CBS-Z	

EXPLODED VIEW OF FG-750 MECHA UNIT

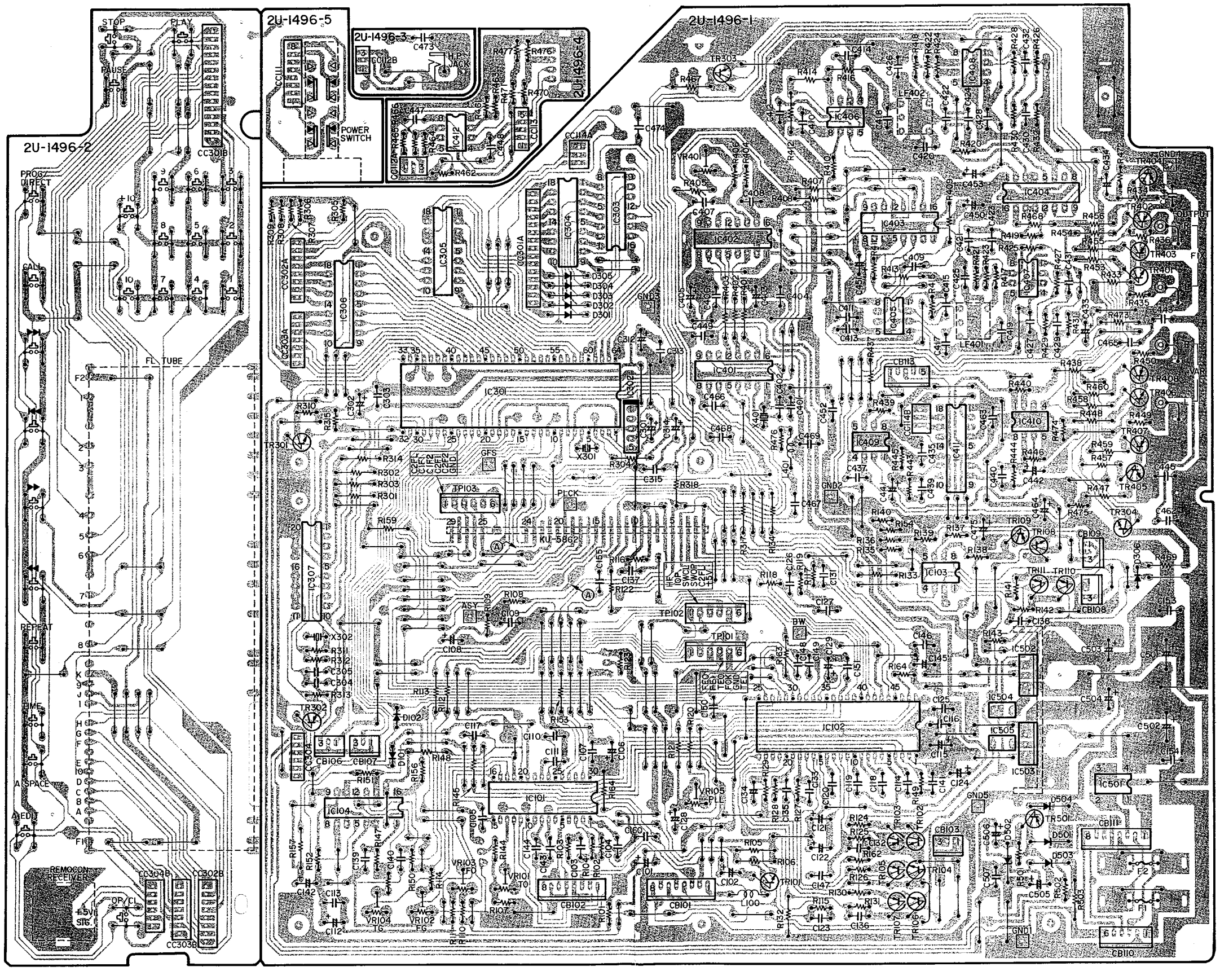


WIRING DIAGRAM

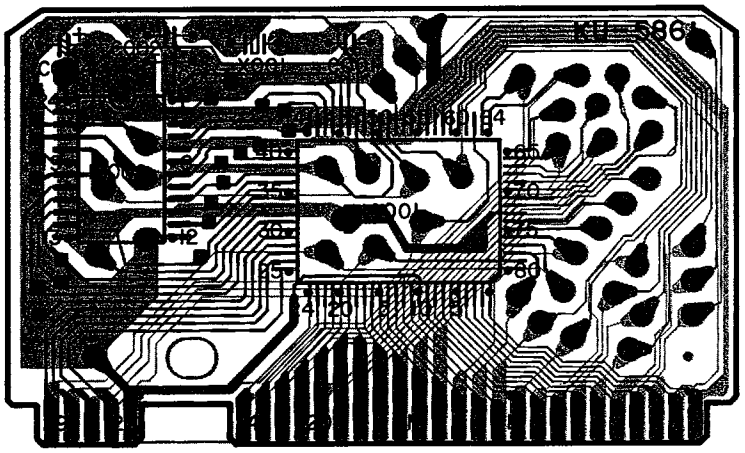


P.W. BOARD

2U-1496 SERVO & SIG. PRO. UNIT



KU-5862 DIGTAL SIG. PRO. UNIT



SCHEMATIC DIAGRAM

KU-5862 DIGITAL SIG.PRO UNIT

2U-1496 SERVO & SIG UNIT

2U-1496-2

NOTES 1. UNLESS OTHERWISE SPECIFIED, ALL RESISTOR VALUES IN OHMS, 1/4 WATT
2. UNLESS OTHERWISE SPECIFIED, ALL CAPACITANCE VALUES ARE IN μF, P: PF
3. ⚠ MEANS IMPORTANT SAFETY ITEM, WHICH MUST BE REPLACED, WHEN NECESSARY, BY A PART SPECIFIED OR MEETING THE SPECIFICATION BY THE MANUFACTURER.
4. THIS SCHEMATIC DIAGRAM IS BASIC CIRCUITRY AND SUBJECT TO CHANGE WITHOUT NOTICE FOR FURTHER IMPROVEMENT

U.S./ Canadian Models

Europe/Australia Models

Multi Voltage Models

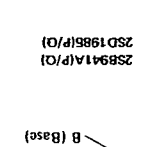
● IC

NJM78M05A

NJM78M05FA

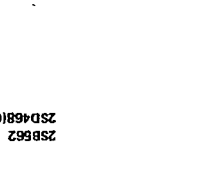
M51953B

NE5532
M5218P
NJM4556D



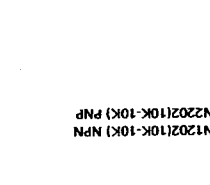
TC-4053BP
HD-14053BP
SM58037C
HD74LS42P
PCM66HP

SM58037C



TC-4053BP
HD-14053BP

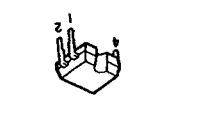
PCM66HP

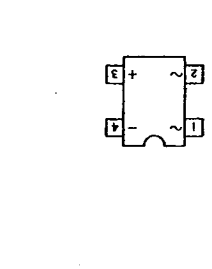


HD74LS42P

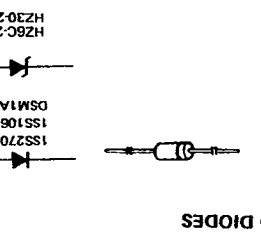
CXA1081S

HM6116FP-4



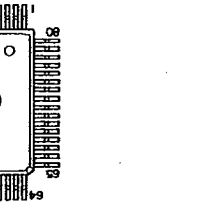


LU59001

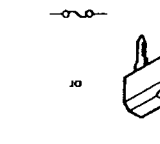


LB1240

MN6632A

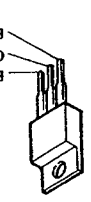


MN6632A
LB1240



● TRANSISTORS

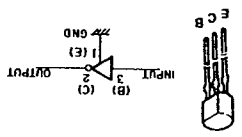
2SB941A(P/O)
2SD1986(P/O)



2SA933(O)
2SD1604(E/F)

2SB562
2SD468(C)

RN1202(10K-10K) NPN
RN2202(10K-10K) PNP



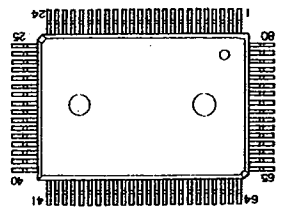
● DIODES

1SS270
1SS106
DSM1A2

HZ6C-2
HZ30-2

SIW8(A)10

CXD1126



● IC PROTECTOR

IOP-F16

DENON

NIPPON COLUMBIA CO., LTD.
14-14, 4-CHOME AKASAKA,
MINATO-KU, TOKYO 107 JAPAN
TEL: 03-584-8111
TLX: JAPANOLA J22591
CABLE: NIPPONCOLUMBIA TOKYO

Printed in Japan 709 BU 0080